

Are Some Very Capable Students Being Denied Their Dream by the Change from a Traditional to an Integrated Curriculum?

Roger J. Bick*

Department of Pathology and Laboratory Medicine, UT McGovern Medical School, Houston, Texas 77030, USA

*Corresponding author: Roger.J.Bick@uth.tmc.edu

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Abstract The 'new' curriculum for medical students inserts basic sciences into case based scenarios in the early years of study, giving them a rapid introduction to the realities of many things they will face upon encountering patients and entering clinics and hospitals. The curriculum also has a large percentage of small group problem based learning (PBL) and team based learning (TBL) hours, with the idea that students are encouraged to undertake self-study and self-directed learning prior to using gained knowledge in discussions, presented cases and clinical problems. This method fosters self-discipline and leads to better teamwork and discussions among groups, with students intensely investigating studies, data and reports to formulate their input. To this extent, the new curriculum is less regimented, and not a data-in, data-out type of teaching in which a lecture, and maybe a lab, gives the students the topics of need-to-know and lessens the requirement for self-study and self-critiquing, which doesn't promote investigation, diversity of study methods and the ability to learn from self-taught ideals that are then incorporated into their studies. The idea is for students to be more capable of initiating their own interests and be more self-reliant and able, rather than simply taking a fact from a lecture and rewriting it as an answer on an exam. This UCSF link gives a good synopsis; <https://www.ucsf.edu/news/2016/08/403791/ucsf-launches-medical-school-curriculum-21st-century>. Overall the revamped curriculum has been a success at many medical schools, usually after a development period of three years or so. Students tend to like it, embrace the changes and appreciate the less rigorous demands together with a pass/fail grading system. However, there are problems, as some students obviously struggle with self-study, and longitudinal grading and assessment. It is obvious that some are much more comfortable with the lecture-lab-exam format and we must entertain the fact that maybe good students and future good doctors are being lost due to their study method preferences.

Keywords: *medical school curriculum, self-study, self-directed learning, USMLE, learning outcomes, case-based, traditional*

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1. Introduction

Changes to produce the new medical school curriculum have been going full blast for a number of years. Fewer medical schools still teach the 'old', rigid, lecture and lab based format, including graded exams as students' progress. Overall the outcomes have been positive. However, in interactions with students via lectures, small group teaching and mentoring assistance with various matters, we have noticed that a few are defeated by the need to apply pre-learned information to a problem and the flipped classroom process.

Opinions of the new curriculum are from one extreme to the other as would be expected. A few years ago a piece in the Montreal Gazette Started with this, "Even the best and the brightest are struggling with McGill University's

rigorous new first-year medical school curriculum this year" and continued "an alarming failure rate has prompted the class president to write to faculty.....". This is obviously a bad reaction which has now, presumably, been addressed [1].

Further distress came from the Washington Post under the headline, "A disturbing truth about medical school – and America's future doctors". Reading the story, John Q Public would have a horrible impression of how young physicians are taught, formed and graduated, the report stating, "Many may not realize that the readiness of aspiring doctors to enter the world of clinical medicine is now based overwhelmingly on a single, standardized, closed-book, multiple choice test" [2].

But the basis of this writing is to ask whether the change from a structured curriculum of two years basic science followed by two years clinical, to an integrated curriculum in which basic sciences are immediately

inserted into clinical scenarios, with small group teaching/study, PBL sessions and flipped classrooms, results in capable students dropping out of medical school and missing out on their dream of becoming a physician. Do some students, a small minority most likely, need the structured, old, method? This is of concern to teachers and administrators who we hope are concerned about all students, especially when support for those that leave is paltry at best [3]. Indeed, Maher and colleagues [4] stated "All medical schools have a duty of care to support students who leave the medical programme".

2. Methods and Discussion

Internet searches and personal discussions with colleagues and students were the resources. The AAMC in its report of medical school costs [5] gives a figure of around \$50-60,000 per year for each student. A student leaving after the first year would likely have this cost plus the cost of undergraduate education, unless they were fortunate enough to have scholarships, to reimburse. If a student realizes that medical school is not for them, or they are unable to pass the exams despite a leave of absence and a retake, then they face a huge debt. The American Medical Student Association notes the high rate of suicides among medical students [6], while there are multiple 'stories' of young people who didn't make it, and there are many sites that list other professions that might entice the unfortunate student. Yet while there are numerous opportunities for unsuccessful students, actual support and direction is sorely lacking, even though the inability of an individual to complete medical school might not be that they can't make it, or take the pressure, or are depressed, it might simply be that the method of teaching and the structure of the 'new' curriculum that is being adopted by most every medical school, is the reason they do not succeed. Is it possible that a few students can receive different teaching? Is there a list of medical schools that offer the 'traditional' curriculum? [7]. Can a student who finds the integrated method a problem, transfer to a traditional school? Is this a realistic option? If this is not an option, are we losing a future superstar practitioner?

The average medical school dropout rate reported by multiple publications is about 6%. Let's say the average first year medical school class size is 150 (In our research we found a spread of 40-300), meaning 9 students do not make it, a number probably considered too small to worry about for many administrators. But, consider there are 179 medical schools in the USA [8], then over 1,600 want-to-be doctors are given their marching orders for diverse reasons. Even if we take 50% away for those who find they don't want to be there, and in our experience students have left to go to law school, veterinary school, to get married and multiple other reasons, 800 physicians are lost; and the AAMC estimate a shortage of doctors by 2030 of 100,000 [9].

The new integrated curriculum has shown much success and acceptance such as the headline in this report from UT Southwestern [10]. Getting students into clinical areas much earlier than they did in the two year basic science construct, appears to induce students to be

innovative, inquisitive and attuned to the practice of medicine, rather than studying to pass the Step exam.

However, there are concerns. USNews ran an article in 2016 [11] entitled "Find Medical Schools That Match Your Learning Style". This is an important consideration but the article does not go far enough. While it includes a view from Dr. William Jeffries, senior associate dean of medical education at the Larner College of Medicine, which states "...the medical school is transforming because educational research indicates that students learn better in an active learning environment than they do in a passive one", the article also states that 'some medical school professors defend traditional lectures....they are the best way to impart passion for medicine to the next generation'. Student views are included and the options section immediately veers away from lectures. There is also this paragraph and a view from Dr. Richard Gunderman, chancellor's professor at Indiana University-Indianapolis.

Popular medical school alternatives to lectures include case studies, where students are asked to diagnose and treat a hypothetical patient based on a complex array of symptoms, and flipped classrooms, where students watch video lectures at home and apply that knowledge in class projects and discussions.

But Dr. Richard Gunderman, chancellor's professor at Indiana University—Indianapolis, says students should not write off the value of the traditional lecture. "Like any other form of teaching, it can be done well or poorly," he says. Gunderman, who has won numerous teaching awards, says medical students who feel inspired by TED Talks could find similar inspiration through a great medical lecture from an experienced doctor who serves as a role model. And continuing this theme, what if a student, with a 4.0 in biochemistry or molecular biology, or another 'tough' subject (no disrespect intended), desires a lecture-based, disciplined method of instruction? What if a music major at college (just a random selection here), would rather have a good input of science to start with before trying to insert these facts and learnings into a clinical problem?

In discussions with past and present colleagues (Special thanks to Professor Jeffrey Actor at UT McGovern Medical School, course director for immunology, for his very insightful input), a number of concerns have arisen and bear scrutiny. If pass/fail is the method of choice, how much did some students fail by? If 70 is pass, did they get 70.1 or 100? Which brings us to remediation; Does this grading method allow for remediation, and if so what is remediated? Don't get me wrong here, I am all for students meeting the clinical world as soon as possible, but I am concerned. A paper by Cooles and colleagues [12] investigated grading changes in a systems-based curriculum, and found that failure rates increased in subjects that already had high failure rates, while pass levels increased in subjects that already had high pass rates. Does a student get worse in immunology and better in ICM and balance the pass rates and pass average? Is that student deficient in their knowledge of immunology?

There are things which should be of concern and addressed, rather than casting aside a debt-laden student because there are only a few of them. Here are some suggestions:

When a student interviews for admission he/she should be asked what type of teaching they received and what they would prefer.

The student should also ask what type of teaching is given at the school and what are the ramifications of failing regarding support and remediation. *“The curriculum, arguably more than anything else, will mean the difference between a positive and a negative medical school experience. One style of learning can work well for one person but not another”* [13]. Further, *“the article continues, “Some students, for example, happily learn by memorizing a required list or watching a video stream repeatedly. They feel confident in their ability to earn an A grade when they have memorized the requirements. These types of students can become anxious when they don’t know where they stand with respect to others in their class. Other students like to branch out and work on solving problems with a team or study group”*.

Should one go to the American Association of Medical Colleges site (<https://www.aamc.org/about>), and I highly recommend it for students, in 2012-2013, only 6.6% of the schools participating in the survey listed their program as having no planned change or recently implemented (9 out of 137). Want this traditional curriculum then you’re choices are very limited, and since 2013 I expect that the number offering is less than 9.

3. Conclusions

While most medical students are very happy with the new curriculum, its structure and content, there are a few who would rather a grade spectrum so they are aware or how well they did in particular subjects prior to their STEP exam. Should students be informed individually as to how well they performed and does pass-fail in any way affect the residency selection? Have a look at this link [14] to see the array of concerns. One interviewer pretty much stated that they don’t even bother with the first two years and only look at years three and four and the clinical concentration grades.

Are some students not suited to the new curriculum? The question has been asked many times, that if the old system turned out good physicians, why the need for change. The answers to this are fairly obvious, but maybe some students would benefit from the two years basic, two years clinical format. As stated above, do we lose good physicians?

Even though average scores remain constant, are some basic science subjects taking a hit? Do we have a student who was poor on histology going into pathology? Maybe this doesn’t matter.

For those students who do not succeed with the new methods, should they be allowed to transfer easily to a school with the ‘traditional’ curriculum?

Students who do not pass are left to their own devices as to how they pay off their loan for an unsuccessful time in medical school, and must get a job or proceed to another program where they will again be accruing debt.

Consider this excerpt from a paper by Spring and colleagues [Bold print is mine;15], “Student well-being is enhanced and objective academic performance is not adversely affected by a pass/fail evaluation system, but

students’ ability to obtain a desired residency programme may be hindered by individual programme directors’ preferences for tiered grading systems. There is an overall paucity of literature on this topic and additional study is needed”. And from Lewis et al [16], “Students and residents prefer the ongoing use of numerical scoring because they believe that scores are important in residency selection, that residency applicants are advantaged by examination scores, and that scores provide an important impetus to review and solidify medical knowledge”. These findings were in 2011, so maybe things have improved and pass/fail and the new curriculum go hand in hand to give students an overall better, more enjoyable, less fretful experience but more research is necessary as to whether pass/fail “impacts other measures of academic performance such as residency placement”. All is well with both pass/fail and tiered grading come the USMLE scores it seems, but what are we missing? What are the students missing? What changes do we need to make?

Introducing students to clinical aspects of doctoring early is a major bonus, and coupled with the innovative approaches that require self-assessment, self-discipline, self-study and integration of findings and information into group sessions via flipped classrooms and similar is a laudable thing to strive for. We need quality physicians who can understand patient needs, can deduce likely problems, and yet be able to act compassionately and provide quality medicine and care. This should be achieved with the new integrated format, but will it accommodate every applicant and every student? Obviously not is the answer. Should a student miss out on their dream because the mode of teaching and study is not what is best for them?

More must be done to train the teachers for this overhauling of traditional methods and the forming of compassionate doctors. To this end, a study was made of personality profiles of male and female medical students and determined that females were overall more compassionate while males were more confident. Does the new curriculum address these differences? [17]. Possibilities and problems in the future, particularly when one moves from rich to poor countries will arise and need to be *specifically* addressed, as Alkan states, [18] “bridge the gap between the doctor in industrial countries and the physician in Third World countries”. This is of major importance and is noted in a report by Kucheryavenko [19] in which he discusses that there is more than one right answer to the ongoing discussions of a traditional versus a progressive curriculum. This ‘theme’ is continued in a paper by Philibert [20] which delves into the need for the development of programs and pathways in poorer countries. “medical schools aim to make curriculums mirror the real world”. Is this the truth? Dr. Kolars [20] continues that Sub-Saharan countries desire an education that is linked to local health needs, and I would imagine focused epidemics such as the recent Ebola outbreak in 2014-2016. So a new curriculum which relieves stress, introduces students to patients rapidly, and produces an overall more capable and compassionate physician is probably fine for high income countries, while not addressing the needs of individual groups.

Will we produce good average physicians? Do some students regret not knowing what they actually scored on

an exam? Do some students thrive on a five tiered system? Do some students miss out on a coveted residency because their top of the class grades are not known by interviewers and residency directors? The answers are, we don't know....yet; yes some do, but we don't know and the sooner the better, as support must be available for students who believe they failed because of the demands of the new curriculum and are sure they would have succeeded given the traditional two year basic science, two year clinical, format.

For an overview of the changes implemented at UT McGovern Medical School please visit <http://www.tmc.edu/news/2017/08/building-better-doctors/>.

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